Space Weather Forecast

Issued on Monday 18 November 2024 at 00:58 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Faster solar winds bring a chance Minor Geomagnetic Storms (G1) at times.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low during the past 24 hours, with only Common class flares observed.

There are currently nine sunspot regions on the visible disc, with AR3895 having faded and AR3897 , AR3898 and AR3899 numbered. Two remaining unnumbered regions rounding the eastern limb. The largest sunspot region remains AR3889 in the west, although this region continue to show simplification and a lack of activity. There are a number of unnumbered sunspot regions emerging on the disc, including a cluster near the southeast limb, which is currently difficult to analyse due to foreshortening effect and for now attributed to one region although this subject to change.

No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a slow-regime, with speeds between 320-360km/s. The interplanetary magnetic filed (IMF), Bt, was weak. The north-south component also varying weakly. The net result of the above solar wind measures was Quiet (0-2Kp) geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with the arriving regions contributing to a daily chance of Moderate flares and a persistent slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

The forecast is dominated by faster solar winds. An enhancement is expected early in the period, with a likelihood of elevated wind speeds, 450-500km/s, occurring for a time during Day 1 (18 Nov) or more likely into Day 2 (19 Nov). Wind may wane into Day 3 (20 Nov) but with the threat of further enhancement to slight elevated or elevated levels by Day 4 (21 Nov).

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Quiet to Unsettled (Kp1-3) conditions expected through much of the period, with a chance of Active (Kp4) intervals through Days 1 and 2 (18-19 Nov), and a slight chance of a G1 Minor Geomagnetic storm (Kp5). Activity expected to increase through Day 4 (21 Nov) becoming generally Unsettled to Active (Kp3-4) with a chance of G1-2 Minor to Moderate Geomagnetic Storm intervals.

Energetic Particles / Solar Radiation: There is a daily slight chance of S1/Minor solar radiation storms as the current largest sunspot region nears the western solar horizon.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	1	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	30	30	30	30
Very Active	R3-R5 (X Class)	No	5	5	5	5

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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